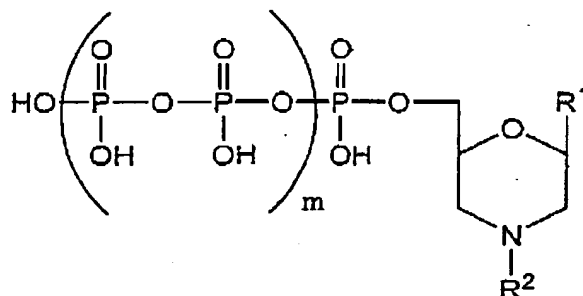## Amendments to the Claims:

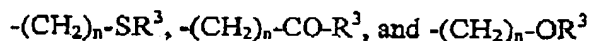This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Canceled).

Claim 2 (Previously Presented): A morpholino-nucleotide of the formula:


wherein R^1 represents a nucleic base, m is 0 or 1, and R^2 is selected from the group consisting of:

$$-(CH_2)_n\text{-}SR^3, \ -(CH_2)_n\text{-}CO\text{-}R^3, \ and \ -(CH_2)_n\text{-}OR^3$$

in which n is an integer ranging from 1 to 12 and R^3 is selected from the group consisting of a label, a protein, an enzyme, a fatty acid, and a peptide.

Claim 3 (Previously Presented): The morpholino-nucleotide of claim 2 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

Claim 4 (Previously Presented): The morpholino-nucleotide of claim 2 wherein R^1 is selected from the group consisting of:
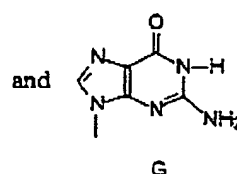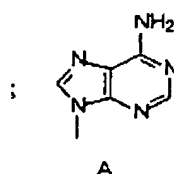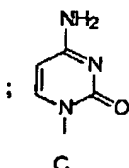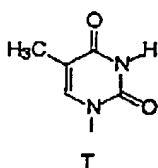
Claim 5 (Previously Presented): The morpholino-nucleotide of claim 2 wherein R^3 is a label selected from the group consisting of radioactive products, luminescent products, electroluminescent and fluorescent products, and enzymatic labels.

Claim 6 (Previously Presented): The morpholino-nucleotide of claim 5 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

Claim 7 (Previously Presented): The morpholino-nucleotide of claim 2 wherein R^3 is a fluorophore.
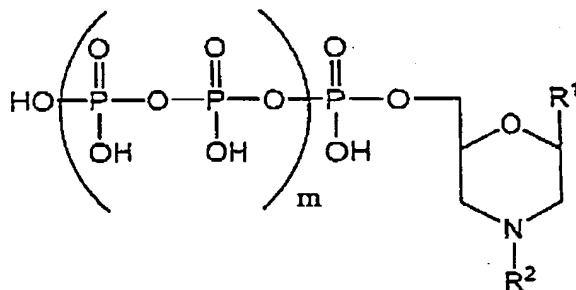
Claim 8 (Previously Presented): The morpholino-nucleotide of claim 7 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

Claim 9 (Previously Presented): The morpholino-nucleotide of claim 2 wherein R^3 is selected from the group consisting of fluorescein, biotin, and rhodamine.

Claim 10 (Previously Presented): The morpholino-nucleotide of claim 9 wherein R^1 is a natural nucleic base selected from the group consisting of adenine, guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine.

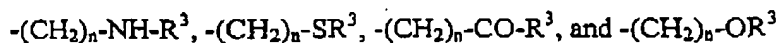Claim 11 (Previously Presented): The morpholino-nucleotide of claim 2 wherein m is 0.

Claim 12 (Previously Presented): A morpholino-nucleotide of the formula:

wherein R^1 is a natural nucleic base selected from the group consisting of guanine, cytosine, thymine, uracil, xanthine, hypoxanthine, and 2-aminopurine; m is 0 or 1; and R^2 is selected from the group consisting of:

$$-(CH_2)_n\text{-}NH\text{-}R^3, \ -(CH_2)_n\text{-}SR^3, \ -(CH_2)_n\text{-}CO\text{-}R^3, \text{ and } -(CH_2)_n\text{-}OR^3$$

in which n is an integer ranging from 1 to 12 and R^3 is selected from the group consisting of a label, a protein, an enzyme, a fatty acid, and a peptide.

Claim 13 (Previously Presented): The morpholino-nucleotide of claim 12 wherein R^3 is a label selected from the group consisting of radioactive products, luminescent products, electroluminescent and fluorescent products, and enzymatic labels.

Claim 14 (Previously Presented): The morpholino-nucleotide of claim 12 wherein R^3 is a fluorophore.

Claim 15 (Previously Presented): The morpholino-nucleotide of claim 12 wherein R^3 is selected from the group consisting of fluorescein, biotin, and rhodamine.

Claim 16 (Previously Presented): The morpholino-nucleotide of claim 12 wherein m is 0.

Claim 17 (Previously Presented): A morpholino-nucleotide of formula I:
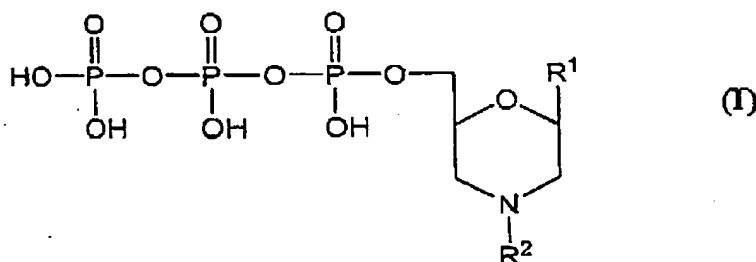
wherein R^1 is a nucleic base selected from the group consisting of adenine, guanine, cytosine, and thymine; R^2 is $-(CH_2)_4\text{-}NH\text{-}R^3$; and R^3 is $-C(S)\text{-}NH\text{-}$fluorescein.

Claims 18-32 (Canceled).